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"TRANSITIONAL OBJECTS" AS ESTABLISHING OPERATIONS FOR THUMB SUCKING: A CASE STUDY

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This study examines the effects of a "transitional object" (surgical cloth) on the thumb sucking of a 3-year-old boy in two conditions: while sitting in the lap of his physical therapist and while alone in his crib. Sucking occurred when the cloth was present and did not occur when it was absent, regardless of condition. These results are discussed in terms of establishing operations, object attachment, and application.

DESCRIPTORS: transitional objects, thumb sucking, establishing operations, habit disorders

In their 1st year of life, most human infants exhibit an array of social responses (e.g., mouthing, clinging, tracking) that are functionally related to the physical proximity of the infants' caretakers, especially their mothers. Developmental experts have classified these responses as attachment behavior (Bowlby, 1969). As physical proximity inevitably decreases between child and caretakers (e.g., with increases in development, changes in schedule, etc.), as many as 60% of children will allocate portions of their attachment responses to a favored inanimate object such as a blanket or a soft toy (Mahalski, 1983). A common developmental classification for these objects is *transitional object* (TO) because they are said to facilitate the transition from dependence to autonomy (Litt, 1986). To date, there have been few attempts to establish a behavior-analytic classification for TOs.

A classification consistent with the theme of this special issue is the establishing operation (EO). An EO momentarily alters the reinforcing effectiveness of events and the frequency of behaviors previously reinforced by those events (Michael, 1993). The EO is distinct from a discriminative stimulus (S^D) because the EO is not correlated with the differential availability of reinforcement. TOs set the occasion for child exploratory behaviors in ways that are suggestive of the EO, but group designs and limited controls on external sources of reinforcement in the relevant research limit the basis for firm conclusions (Passman & Weisberg, 1975). TOs are also related to habitual child behaviors. For example, as many as 50% of children with a TO also engage in thumb sucking (Mahalski, 1983) and, although clinically important patterns of covariation have been reported by behavior analysts (Friman, 1990), the EO classification has not been proposed. This case study explores the plausibility of classifying TOs as EOs for thumb sucking.

METHOD

Participant. Tim was a 3-year-old boy with moderate cognitive delays and no speech who had lived in intensive care since birth, was ventilator dependent, and was fed intravenously via a central line. Tim's medical records documented how the nursing staff taught him to suck a pacifier at 21 months by coating it with honey. Compli-

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cations followed from his frequent misplacement of the pacifier in his crib, resulting in mild tantrums and periodic detachment of his central line. This problem was solved by tying a swatch of surgical cloth (18 in. square) to the pacifier, enabling Tim to find it without assistance. By 23 months, he was persistently sucking the pacifier and also fingering the cloth to which it was tied. At 25 months he began sucking his thumb and rubbing his face with the cloth. Thereafter, he reportedly stopped sucking his pacifier and sucked his thumb exclusively, but only when he held a piece of surgical cloth.

Procedure. Tim was observed in two settings, sitting in the lap of his physical therapist and alone in his crib. Observations occurred daily at 9:30 a.m. for approximately 5 min for 3 weeks and involved a 10-s partial-interval recording system. If his thumb simultaneously touched two lips, a sucking interval was recorded. During baseline sessions, all surgical cloth was removed from his visual range. During testing sessions, a surgical cloth was placed either in his lap or in his crib depending on the condition. The physical therapist and the observer were present during the sessions but did not speak to Tim. A second observer independently recorded sucking using the same observational system during one session in each condition. Only two disagreements were noted, yielding a percentage of agreement in excess of 98%.

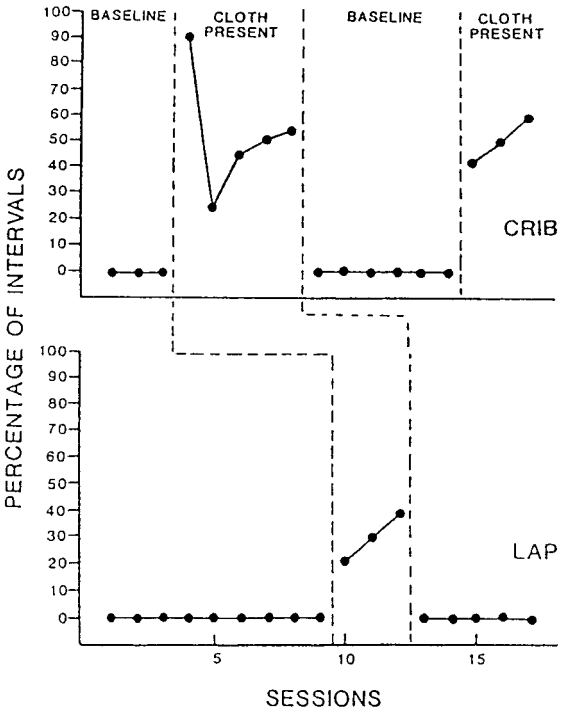

Figure 1. Percentage of intervals in which thumb sucking was observed across lap and crib conditions.

RESULTS AND DISCUSSION

Tim's thumb sucking rapidly emerged when the cloth was present and did not occur when the cloth was absent (see Figure 1), which seems to suggest the cloth was an S^D. Yet, social reinforcement for thumb sucking was controlled (absent) in both conditions, and the automatic reinforcement assumed to result from the sucking itself (see Bijou & Baer, 1965) was freely available throughout the study. Thus, it seems plausible that the cloth was functioning as an EO rather than as an S^D. Unfortunately, no data on staff responses to sucking were collected; thus, the S^D account, although remote, cannot be ruled out. Data were also not collected on Tim's actual manipulation of the cloth, although he did immediately reach for it whenever it was in view. In addition, the present data do not address how the presence of the cloth altered the reinforcing properties of sucking. One possibility is that, through the pairing of the two sources of stimulation, their functions became complementary in ways reminiscent of other complementary activities (e.g., kissing and hugging, eating peanuts and drinking, etc.). Addressing these limitations and speculations would require new research that includes data on object manipulation, external sources of reinforcement for the behavior influenced by the object, and the separate and joint functions of the object and the behavior.

These limitations notwithstanding, the findings from this case study extend the literature on object attachment by demonstrating the strong antecedent influence of a TO on thumb sucking and by proposing a behavior-analytic classification of the object and its influence (i.e., EO). An important clinical implication of the findings is that when treatment of thumb sucking is clinically necessary for children who also have TOs, therapeutic control may be obtained indirectly by limiting access to the object. Further research is needed to clarify the antecedent role of TOs in thumb sucking and in other important child behaviors (e.g., exploring, clinging, crying), and to determine the extent to which that role can be transferred to applied outcomes. One rich source of relevant data and research questions is the large developmental literature on attachment behavior (e.g., Bowlby, 1969; Litt, 1986; Mahalski, 1983; Passman & Weisberg, 1975).

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Society for the Quantitative Analyses of Behavior

Annual Meeting, May 25-26, 2001

Hyatt Regency Hotel, New Orleans

Friday, May 25

John Staddon	*Duke University*, The dynamics of interval timing
Amy Odum	*University of New Hampshire*, Behavioral pharmacology and timing
Geoffrey White	*University of Otago*, Temporal generalization and diffusion in forgetting
Kim. Kirkpatrick	*York University*, Packet theory of conditioning and timing
William Roberts	*University of Western Ontario*, Timing and counting by pigeons: Do they require similar or different mechanisms?
Richard Keen	*Indiana University*, Relative numerosity discrimination and short-term memory
Allen Neuringer	*Reed College*, Operant variability and a theory of operant behavior.
Alexandra Logue	*Baruch College, City University of New York,* Self-control, impulsiveness, and higher education administration
Howard Rachlin	*Stony Brook*, Teaching and learning in the prisoner's dilemma
John Kraft	*Armstrong Atlantic State University*, Quantifying human social behavior with the Ideal Free Distribution model
Anthony McLean	*University of Canterbury*, Extraneous reinforcement, response rate and resistance to change
Randolph Grace	*University of Canterbury*, Acquisition of preference: comparing representational and linear operator models
William Baum	*University of New Hampshire*, Analysis of visits in the dynamics of choice

Saturday Morning, May 26

Ralph Miller	*Binghamton*, Interference between cues and between outcomes presented together and presented apart
Douglas Williams	*University of Winnipeg*, Input coding in animal and human associative learning
Tony Nevin	*University of New Hampshire*, Behavioral Momentum: measurement properties of force and mass
John Donahoe	*University of Massachusetts*, On neuroscience and behavioral analysis.

Saturday Afternoon, May 26
Invited Preeminent Tutorials: From basics to contemporary paradigms

Author	Affiliation	Title	Discussant
Michael Davison.	*Auckland University*	What Reinforcers Do To Behaviour	William Baum
Randolph Grace	*University of Canterbury*	Quantification	John Nevin
William Timberlake	*Indiana University*	Behavior Systems	Donald Patterson
Leonard Green	*Washington University*	The Discounting Function	Michael Davison

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